Why Worry About Earthquakes?

Idaho experiences hundreds of earthquakes every year. Most of them are too small to feel, but they mean we can expect big ones any time. On the average, some place in Idaho experiences shaking strong enough to damage chimneys every ten years. And about every twenty years we can expect a good shake. The Borah Peak earthquake (1983) and the Hebgen Lake earthquake (1959) are two of the largest quakes in the lower forty-eight states in the last thirty-five years.

Buildings built directly on a fault may be destroyed, but most damage is the result of shaking: objects falling from tall shelves, file cabinets and bookcases toppling, unbraced parts of structures tearing loose. Even small quakes can cause landslides or damage to roads and bridges.

Even though earthquakes can't be prevented, you *can* take steps to reduce their effects:

- Since most injuries occur from falling objects, you can store heavy things on lower shelves. Make sure cabinet doors have latches that close securely.
- Secure hot water heaters—they can shift and break water lines (and gas lines if they are gas-fired).
- Check brick chimneys and walls for deteriorating mortar. Brace chimneys and roof-mounted air-conditioners.
- Check that your home is secured to its foundation. If you have a mobile home that's not on a permanent foundation, brace its supports and secure tie-downs to the frame.
- Ask your agent about earthquake insurance. Your homeowner's policy doesn't cover earthquakes.

Why bother? A damaging earthquake can last as little as ten seconds, but it gives no warning. A few hours, a few dollars can make a big difference. Ask yourself if preventing inconvenience is worth it. Ask yourself if preventing injury is worth it.

What to do during an earthquake

Earthquakes are accompanied by a rumbling. You may feel dizzy because the ground is moving, and it may be difficult to stand. Panic is a natural reaction. The most important thing to remember is STAY WHERE YOU ARE! If you are inside, stay inside. If you are outside, stay outside.

Most earthquakes are over in a matter of seconds, so you have only a few moments to protect yourself.

- If you are inside, take cover under a desk or table, away from windows. If no cover is near, crouch in a doorway. Stay there until the shaking has stopped.
- If you are outside, get away from buildings and power lines. The greatest danger from falling debris is just outside doorways and on sidewalks close to outer walls.

Afterwards, be prepared for aftershocks—although most of them are not as strong as the main shock, they may be strong enough to cause additional damage or bring down weakened structures.

For more information

For more information about Idaho's earthquakes and how to survive them, contact

Idaho Bureau of Disaster Services
4040 Guard St
Boise, Idaho 83705
(208) 334-3460
Email mitigation@bds.state.id.us

The material is based on an article prepared by Wiss Janny Estner Associates Inc. on behalf of the California Governor's Office of Emergency Services under the National Earthquake Technical Assistance Contract, EMW-92-C-3852.

IDAHO EARTHQUAKE Action

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BRACING HEATING STOVES AND PROPANE TANKS FOR EARTHQUAKE SAFETY

A GUIDE FOR HOMEOWNERS

WOOD BURNING STOVES

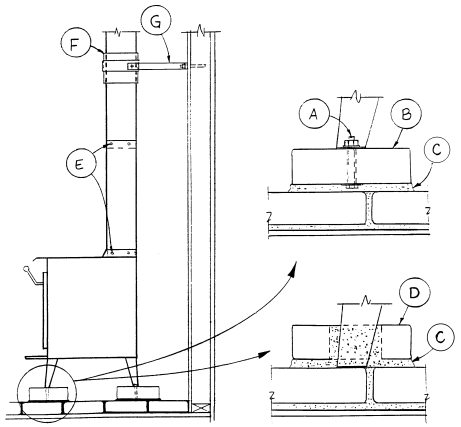
Freestanding stoves—wood stoves, pellet stoves or gas-fired units—are common in Idaho. Except for zero-clearance units, mobile home approved units, and other installations where special insulation is provided, fire codes require at least 36-inch clearance around the stove and 18-inch clearance around a single-wall stovepipe. This arrangement leaves the stove unsupported on all four sides and thus vulnerable to sliding or overturning in an earthquake. Even if the stove doesn't tip over, separation from the stovepipe could easily cause a fire or release dangerous fumes inside the home.

To reduce the fire hazard from an earthquake, stoves should be anchored to the floor and the stovepipe sections secured to prevent separation. The following recommendations apply to common installations:

- Stoves resting on a brick hearth can be anchored using additional bricks and mortar (see figure).
- Mobile-home approved units (which are built with extra internal shielding) come with pre-drilled holes in the pedestal or legs and can be safely anchored to the underlying floor frame. Use 3/8-inch diameter bolts and an oversized 2-inch diameter fender washer on the underside of the wood flooring.
- Stoves resting on a concrete slab on grade can be anchored directly to the concrete using 3/8-inch diameter expansion anchors embedded 3 inches into the concrete.
- Stovepipes should be secured to the flue exit, and segments should be fastened to each other with sheet metal screws. (For double-walled pipe, make sure the screws are short enough so they do not penetrate the inner pipe wall.) Make sure that the anchors or braces do not conduct heat from the stove to the combustible materials in the home.
- If the stovepipe is unsupported for more than 8 feet, provide one mid-height support to prevent lateral movement. Do this by running the pipe through a ready-made attic radiation shield that is then braced to the wall.

For other configurations, consult your stove vendor or local fire department.

Tall, freestanding stovepipe *outside* also needs to be supported. Check with your stove dealer for supports that fit your roof configuration.



ANCHORING A STOVE TO BRICK HEARTH

For stoves on a brick hearth, anchor each leg with a 3/8-inch diameter bolt (A) through a 1/2-inch hole to new brick (B). Use a masonry drill to drill the hole. Don't over-tighten the bolt! Grout the new brick to the top of the hearth with one inch of new grout (C). Alternatively, build an 8-inch square brick pad (D) with a pocket for each leg. Place at least one inch of grout all around the leg and fill the pocket completely.

ANCHORING THE PIPE

Use sheet metal screws (E) at flue exit and between stove pipe sections: Attach a radiation shield with pipe clamp (F) braced to wall using two Simpson WTT187 tension ties (G) or equivalent attached to wall stud with 3/8-inch by 3-inch lag screws.

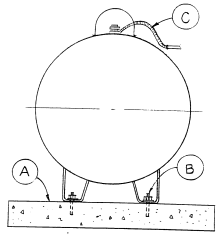
PROPANE TANKS

Gas leaks frequently cause fires following earthquakes. Unless they are secured, propane tanks can slide, rock, or even overturn during an earthquake, which could break the supply line or possibly rupture the tank.

To reduce this hazard:

- Put the tank on a continuous concrete pad and bolt the legs to the pad. The pad should be six inches thick and one foot wider than the tank on either side. For a tank of 500 gallons or less, use four 1/2-inch diameter bolts embedded in the concrete at least three inches. For an existing pad, use a masonry drill to drill holes for 3/8-inch expansion anchors. These holes should be four to five inches deep.
- Use a flexible hose connection between the tank and the supply line and where the supply line enters the house.
- Clear the area around the tank of tall or heavy objects that could fall and rupture the tank or the supply line.

Keep a wrench tied on a cord near the shut-off valve and make sure family members know how to turn off the supply line if they smell a gas leak.



ANCHORING A PROPANE TANK

Mount the tank on a 6-inch thick concrete pad (A) using four 1/2-inch diameter bolts (B) embedded at least three inches into the concrete. Use a flexible hose (C) between the tank and the rigid supply line.

For larger tanks (farm or commercial use) special shut-off valves are available to automatically cut the gas supply following an earthquake. The valves are not cheap, but owners need to ask themselves how long they could afford to be without gas. What are replacement costs?